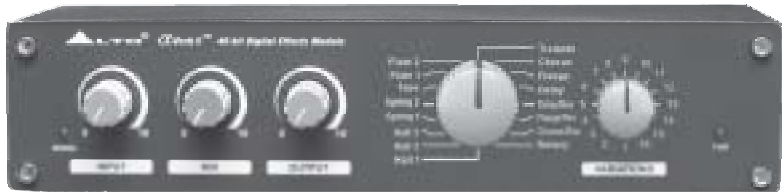
ALTO®

User's Manual

αVerb II™

40-BIT DIGITAL EFFECTS MODULE



www.altoproaudio.com
Version 1.0 JUNE 2007
English

IMPORTANT SAFETY INSTRUCTION

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

TO REDUCE THE RISK OF ELECTRIC SHOCK PLEASE DO NOT REMOVE THE COVER OR THE BACK PANEL OF THIS EQUIPMENT. THERE ARE NO PARTS NEEDED BY USER INSIDE THE EQUIPMENT. FOR SERVICE, PLEASE CONTACT QUALIFIED SERVICE CENTERS.

This symbol, wherever used, alerts you to the presence of un-insulated and dangerous voltages within the product enclosure. These are voltages that may be sufficient to constitute the risk of electric shock or death.

This symbol, wherever used, alerts you to important operating and maintenance instructions. Please read.

⏚ Protective Ground Terminal
~ AC mains (Alternating Current)
ϟ Hazardous Live Terminal
ON: Denotes the product is turned on.
OFF: Denotes the product is turned off.

CAUTION
Describes precautions that should be observed to prevent damage to the product.

1. Read this Manual carefully before operation.
2. Keep this Manual in a safe place.
3. Be aware of all warnings reported with this symbol.
4. Keep this Equipment away from water and moisture.
5. Clean it only with dry cloth. Do not use solvent or other chemicals.
6. Do not damp or cover any cooling opening. Install the equipment only in accordance with the Manufacturer's instructions.
7. Power Cords are designed for your safety. Do not remove Ground connections! If the plug does not fit your AC outlet, seek advice from a qualified electrician. Protect the power cord and plug from any physical stress to avoid risk of electric shock. Do not place heavy objects on the power cord. This could cause electric shock or fire.
8. Unplug this equipment when unused for long periods of time or during a storm.
9. Refer all service to qualified service personnel only. Do not perform any servicing other than those instructions contained within the User's Manual.
10. To prevent fire and damage to the product, use only the recommended fuse type as indicated in this manual. Do not short-circuit the fuse holder. Before replacing the fuse, make sure that the product is OFF and disconnected from the AC outlet.

WARNING

To reduce the risk of electric shock and fire, do not expose this equipment to moisture or rain.

Dispose of this product should not be placed in municipal waste and should be separate collection.

11. Move this Equipment only with a cart, stand, tripod, or bracket, specified by the manufacturer, or sold with the Equipment. When a cart is used, use caution when moving the cart / equipment combination to avoid possible injury from tip-over.

12. Permanent hearing loss may be caused by exposure to \ extremely high noise levels. The US. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible exposure to noise level.
These are shown in the following chart:

HOURS X DAY	SPL	EXAMPLE
8	90	Small gig
6	92	train
4	95	Subway train
3	97	High level desktop monitors
2	100	Classic music concert
1,5	102	
1	105	
0,5	110	
0,25 or less	115	Rock concert

According to OSHA, an exposure to high SPL in excess of these limits may result in the loss of heat. To avoid the potential damage of heat, it is recommended that Personnel exposed to equipment capable of generating high SPL use hearing protection while such equipment is under operation.

The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

The mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

IN THIS MANUAL:

1. INTRODUCTION.....1
2. FEATURES.....1
3. CONTROL ELEMENTS.....2
4. INSTALLATION AND CONNECTION.....4
5. PRESET DESCRIPTION.....9
6. PRESET LIST.....12
7. BLOCK DIAGRAM.....13
8. TECHNICAL SPECIFICATIONS.....14
9. WARRANTY.....15

1. INTRODUCTION

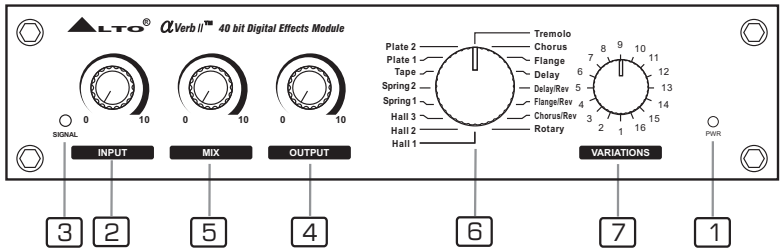
Thank you for your purchasing the αVerb II digital multi-effect. It is just one of the many ▲LTO products that a talented, multinational Team of Audio Engineers and Musicians have developed with their great passion for music. The αverb II has been created with no economies thinking at the challenges of the digital era. It is made in roadworthy and durable package for live and recording studio applications. The αVerb II includes 16 Factory Presets including Reverbs, Chorus, Flanger and Delay, as well as 16 variations of the basic preset for each one of them for a total of 256 powerful and flexible different preset sounds.
Enjoy your αVerb II and make sure to read this Manual carefully before operation!

2. FEATURES

- ▲ Robust and Compact Design
- ▲ 40-bit Digital Audio Processor
- ▲ 16 Great Sounding Programs
- ▲ Variation adjust knob (16 positions)
- ▲ 256 presets in total
- ▲ Analog Mix (Dry/Wet) control
- ▲ User adjustable Input and Output Gain
- ▲ Stereo/Mono Jack Inputs
- ▲ LED control for digital overdrive
- ▲ Easy to operate Front Panel controls
- ▲ SMT Design for greater reliability
- ▲ Short Signal Path and no internal cabling to provide superior sound
- ▲ Manufactured under QS9000, VDA6.1 Quality System

3. CONTROL ELEMENTS

Front Panel:



1 POWER LED

This LED will light up when the AC adaptor is plugged into your αVerb II and the AC outlet.

2 INPUT

This control adjusts the analog input signal level. It controls both the Left (Mono) and Right input levels simultaneously.

3 SIGNAL LED

The LED will light up if the input level is too high. In this case you will experience audible distortion. If the Signal LED lights up, turn the INPUT control down until the LED does not light up at all. Alternatively you can reduce the output level at the instrument source.

4 OUTPUT

This control adjusts the analog output signal level going to the amplifier or mixer from your αVerb II.

5 MIX

This control adjusts the balance between the dry signal at the input stage and the signal processed by your αVerb II. If you turn it down completely, you will not hear and process the signal at all. In center position you will hear the original (DRY) signal and the processed signal (WET) in equal parts, and if you turn it up fully, you will only hear the processed (WET) signal.

6 PROGRAMS

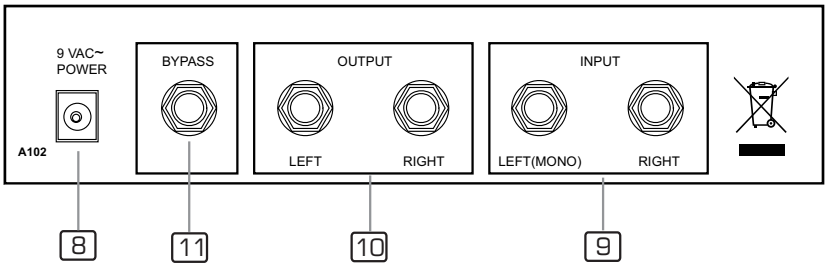
With this big selection knob you access one of the built-in 16 Factory Presets. Choose among a wide range of reverbs, chorus, flanger, delays and combination of them.

7 VARIATIONS

Through this control you can apply 16 different modifications for each of the original 16 Programs selected. See Section 5 "Description of Presets" for further information. In total you have available 256 different Presets in your αVerb II.

3. CONTROL ELEMENTS

Rear Panel



8 POWER CONNECTOR

To Plug-in the AC adaptor included with your αVerb II.

9 INPUT

These 1/4" unbalanced phone jacks connect to sources such as the effects sends of mixing console. They may be used with a nominal input level up to 9 dBu. For mono application, use the Left (Mono) input. In this case, the Left (Mono) input jack is in parallel to the Right jack. This means that when nothing is plugged into the Right input jack, the signal present at the Left (Mono) input is routed to the Right input as well.

10 OUTPUT

These are 1/4" unbalanced phone jacks to connect your αVerb II to the effects returns on a mixing console or power amplifier inputs.

11 BYPASS

This is a 1/4" phone jack to connect an optional footswitch. With the footswitch is in "ON" position, you will hear the Input signal without any digital processing. When the footswitch is in "OFF" position, you will hear the processed signal with the amount of DRY/WET proportion you have set from the front panel.

4. INSTALLATION AND CONNECTION

4.1 AUDIO CONNECTIONS AND POWER UP

a. Audio Connections

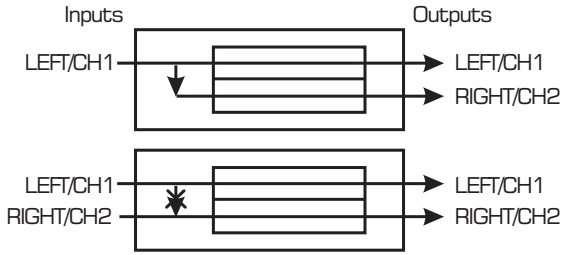
The connections between your α Verb II and other audio devices have to be made using high quality cables to prevent the bad performance. It is advisable to use low-capacitance shielded cables with a flexible internal conductor. Connect the cables to your α Verb II properly following these tips:

- Do not bundle audio cables with AC power cords.
- Do not place audio cables and your α Verb II near sources of electromagnetic interference such as transformers, monitors, computers, etc.
- Do not place cables where they can be stepped on.
- Avoid twisting the cable or having it make sharp, right angle turns.

b. Power Up Setting

After making your connections, turn on the system's power using this procedure:

- The volume controls of the amplifier or mixer must be turned down.
- Insert the Power plug into the POWER input on the rear panel of your α Verb II and plug the power adapter into an AC outlet.
- Turn on the power of your α Verb II, pushing the ON/OFF button on the front panel.
- Turn on the power of the amplifier/mixer, and adjust the volume.



4.2 ANALOG

a. Input Jack Wiring

The [LEFT] INPUT jack of your α Verb II is also a mono input. If you only connect a single mono cable to the [LEFT] INPUT jack, it will be also routed automatically to the [RIGHT] INPUT. However, if you are using a stereo input signal. the LEFT INPUT jack will feed only the LEFT INPUT, and the RIGHT INPUT jack will feed only the RIGHT INPUT.

b. Level Setting

Proper setting of the input and output levels is crucial to get the maximum S/N ratio. In general, you should set both input and output level controls at3/4 or 75% of full.

4. INSTALLATION AND CONNECTION

This will decrease the possibility of distortion and keep the amount of background noise to a minimum. If the signal LED of your αVerb II starts to light-up ,turn down the Input level or decrease the output volume of the source (instrument, mixer send, etc.). If the output level of your αVerb II is causing the mixer or amp to distort, turn down the Output Level of your αVerb II.

c. Effects Mix Level Adjust

Whether a Preset of your αVerb II contains a single effect or two or three effects, you can adjust the αVerb II [MIX] control to obtain a desirable balance between the original signal and the processed one. Turning [MIX] to the right allow you to hear more of the processed sound; turning it to the left let you hear more of the source signal. When hooked up to an instrument setup, such as a guitar amp, the Mix setting will typically be somewhere in the middle, balancing the processed sound with the sound of the source instrument. If your αVerb II is connected to a mixing console's Aux Send, the [MIX] control should be set all the way to the right (effects only) so that the balance can be controlled from the board.

d. Effects Bypass

At any time you can bypass the sound processing, allowing the direct signal to pass through your αVerb II unchanged. This can be done in two ways: by turning the MIX knob all the way to the left or by connecting a footswitch to the [BYPASS] jack and pressing the footswitch. Your αVerb II will automatically recognise the right "polarity" of the pedal.

4.3 INSTALLATION

a. Normal Operation

Your αVerb II may be placed almost anywhere: on a table, on top of an amp, next to a mixing console or inside a standard 19" rack with optional rack mounting kit. If it will be on a piece of furniture, fix the provided rubber feet to the bottom of the unit. Make sure to place your αVerb II AC adapter away from other audio equipment that may induce magnetic fields, and away from the signal wiring, it is possible that your αVerb II may pick up noise fields generated by other equipment such as large power amplifiers. in this case, move your αVerb II away until the noise disappears.

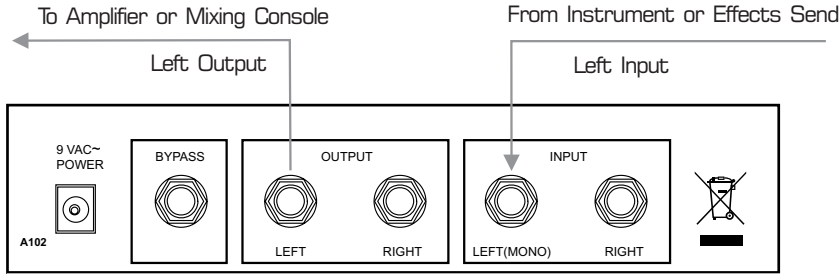
b. Application examples

- LINE LEVEL INSTRUMENTS

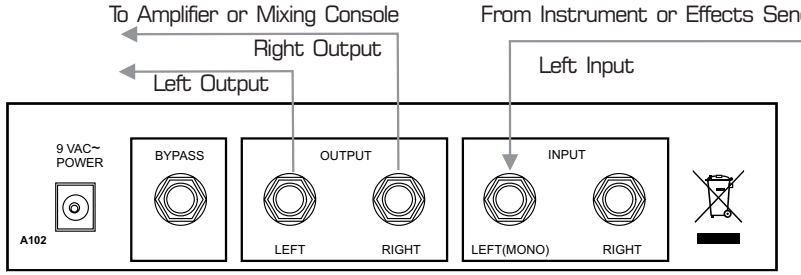
When connecting audio cables and/or turning power on and off, make sure that all devices in your system have their volume controls turned down. Your αVerb II has two 1/4" unbalanced inputs and two 1/4" unbalanced outputs. The configuration will provide three different options:

MONO: Connect an audio cable to the [LEFT] INPUT of your αVerb II from a mono source, and another audio cable from the [LEFT] output of your αVerb II to an amplification system or mixer input. Disregard [RIGHT] Input and Output.

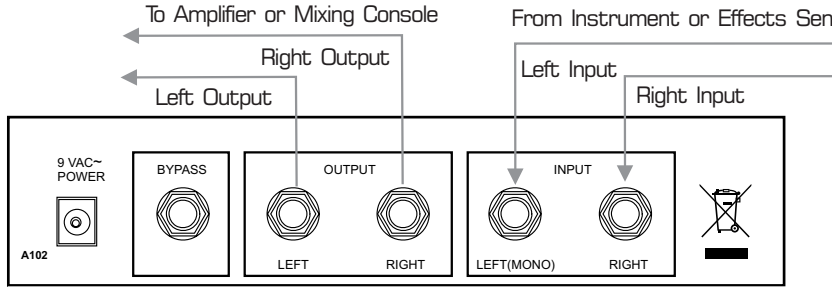
4. INSTALLATION AND CONNECTION



MONO IN, STEREO OUT: While still using a mono input, you could connect two audio cables to the [LEFT] and [RIGHT] outputs of your αVerb II to the inputs of an amplifier or mixing desk.



STEREO: Connect two audio cables to the [LEFT] and [RIGHT] INPUTS of the αVerb II from a stereo source, and two other audio cables from the [LEFT] and [RIGHT] OUTPUTS of your αVerb II to a stereo amplifier or mixer inputs.

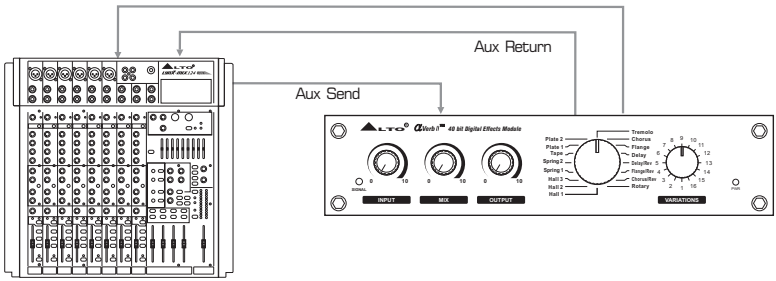


4. INSTALLATION AND CONNECTION

- MIXER

Connection to a Mixing Desk

Your αVerb II can accept mono or stereo sends from the mixing desk. The input circuitry of your αVerb II can easily accept professional +8/9 dBu levels while having enough input and output gain to interface with the low signal levels of home recording systems. Your αVerb II may be connected to a mixing console in several different ways. It can be used with multiple channels at once by using the auxiliary send and return controls of the mixer. another way is to connect your αVerb II directly to the insert send and return of a single channel of your mixing desk. In addition, your αVerb II could be connected to a recording console "in-line" between the output of the mixing console and the input of a tape deck or power amplifier. This last setup would effect the entire mix output.



Using Aux Sends and Returns

Generally, there are two types of AUX sends available on mixing consoles: pre-fader sends (headphone or monitor) and post-fader sends for effects units. Typically, if a mixer has more than two sends per channel (4, 6 or 8, perhaps), the first two sends are reserved for the pre-fader sends, while the remaining sends are used to send the signal to external multi-effects units such as your αVerb II. Using a mixer's AUX sends allows each channel to have its own level control going to the AUX output. It is possible to mix all the channels we want to be sent to the effects by using the individual channel's AUX send levels on the mixer. Most consoles also have AUX master controls, which set the overall level of each AUX output. Sending signal to your αVerb II is only half of the process. With a mixing console, the output of your αVerb II must go back to the mixer and turn up in the mixer before being able to hear it. Depending on the mixer, there are two options for returning the effected signal to the mixer: connecting to dedicated AUX return inputs, or connecting to channel inputs. Everything is easy if the mixer provides dedicated inputs (called returns) for effect devices like your αVerb II. If the mixer does not have these, or all available returns have already been used, it is possible to connect your αVerb II to channel inputs (if there are any remaining). The effect returns generally should only contain processed signal, and non "DRY" signal mixed with it (since these two signals are blended together in the mixer). Therefore, it is necessary to set the mixer, so that only processed ("WET") signal is present at your αVerb II outputs. To do this, turn the Mix control all the way to the right.

4. INSTALLATION AND CONNECTION

Mono In - Stereo Out

If you only want to use your αVerb II for a mono input signal and connect both of its outputs back to the mixer, you will need three audio cables. Connect an audio cable from an effect send to the LEFT input of the αVerb II, another 2 audio cables from the LEFT and RIGHT outputs of the αVerb II to a couple of effect returns or other mixer inputs. With reverb effects your αVerb II creates a stereo output, even though only a single input is used.

Stereo In - Stereo Out

This connection is similar to the one described above. However, using two sends from the mixer, you need one more audio cable to send a stereo signal to the αVerb II's inputs. The use of a stereo input is especially useful for a true stereo reverb program.

How to Set Aux Send and Return Levels on the Mixer:

In the above connections, it is necessary to set proper levels on the mixer's individual AUX Sends, AUX Masters, and AUX Return masters (as well as the αVerb II's own controls) to get good, clean, quiet signal.

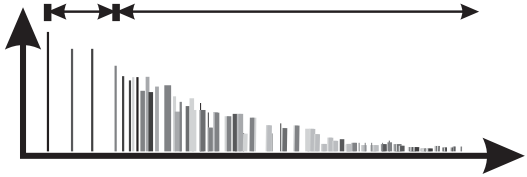
※**NOTE:** Improper level setting is the most common cause of noise and distortion problems. By having the correct level at every point in the send/return chain, it is possible to avoid overloading distortion and minimize noise. The most common mistake using effect units like your αVerb II is to have too low the input signal level and to increase too much the output level to compensate the input and reach the desired effects level: this amplifies the noise reducing headroom. Here is a procedure that will give good results with most standard equipment:

1. Set your mixer's input levels correctly.
2. Turn up the mixer channels' AUX Sends and AUX MASTER (if applicable) to a nominal level (this is usually between "noon" and "3:00" on a rotary knob).
3. Play the source.
4. Turn up the αVerb II's [INPUT] level until you see the SIGNAL LED start lighting on peaks; then reduce it slightly until the LED stops lighting. The ideal input level, to minimize the noise, is just below the clipping level. But if other instruments will be added to the mix later, or levels are unpredictable (as in a live show), it's preferable to leave additional headroom by turning the input level down a bit more.
5. Depending on the input sensitivity of the mixer's channels or AUX Returns, the OUTPUT knob of the αVerb II should be set somewhere between "2:00" and fully clockwise "5:00".
6. Turn up the AUX RETURN level until desired level of effect in the mix is reached. The control in the chain that may need to be set to a low level is the AUX Return on the mixer itself. Here is where should increase or decrease the overall effect level in the mixer to minimize the noise.

5. PRESET DESCRIPTION

5.1 THE REVERBS

Reverb in nature, is the combination of a large number of distinct echoes generated by the reflection of the original sound against obstacles (i.e. walls). In a real acoustic environment, the amplitude and brightness of these reflections decays over time and the decaying is depending on the room size, the position of the sound source in acoustic space, the "nature" of obstacles (shape, material, dimension, etc.) and many other factors.



a. HALLS

This preset simulates a large acoustic space (as a concert hall). Hall wants to simulate large rooms with many reflective surfaces, where sounds can be reflected and also hided, changing its "colour" over time. This is a classic reverb and can be used with all sound sources as vocals, drums or acoustic and electric instruments.

Hall 1 - This is a large bright hall program with 54ms pre-delay, and can be used for almost anything.

Hall 2 - This is a warmer hall program with 77ms pre-delay, and adds depth and character to acoustic instruments.

Hall 3 - The third program is a medium bright hall with no pre-delay, and can be used for snares and percussions.

b. SPRING

Spring 1- This program is suitable for organs and will still be found in many guitar amplifiers.

Spring 2- This program is similar to the previous one, and also be used in organs and guitar amplifiers.

c. TAPE

This program allows you to create more complex patterns that can add a rhythmic quality to the instrument.

d. PLATES

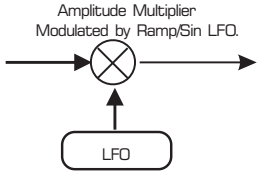
This algorithm wants to simulate the "sound" of a classic plate reverb, obtained using suspended sheet of metal with transducers at either end. This kind of reverb, commonly used in the 1970's, it is still useful for its transparent sound and it works well for vocals, piano, or guitar.

Plate 1- The first program is a classic bright vocal plate.

Plate 2- A warmer variation of the previous program, sounding very well on acoustic guitar and strings.

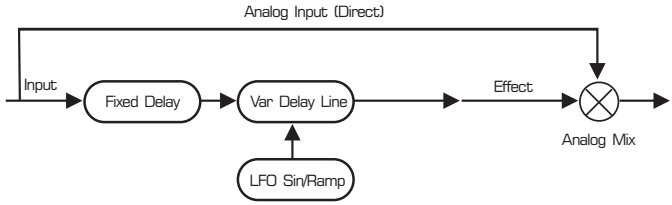
5.2 MODULATIONS

a. TREMOLO



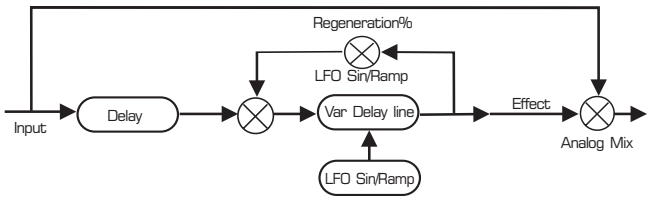
Tremolo is an amplitude modulation of the signal. It is useful for adding warmth and life to standing electric piano or guitar's chords. It is normally used as "WET" effect without adding direct sound or adding a few percentage of it, so to avoid the direct sound to cover the amplitude modulation.

b. CHORUS



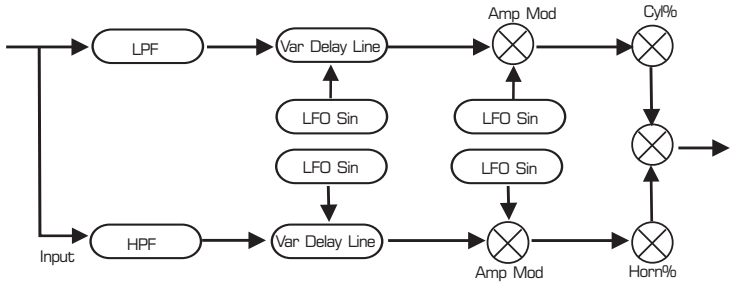
The Chorus effect tries to recreate the illusion of more than one instrument from a single instrument sound. Two musicians playing the same instrument never play in perfect unison (both time and pitch wise). In order to build up the proper illusion using an electronic device, the original sound is summed with a slightly delayed and detuned version of itself. Instead of a constant pitch deviation, more natural results come from a varying pitch deviation (two players never keep equal their relative pitch distance). In this program we implement the variable delay and the detuning of it is modulated by an LFO (low frequency oscillator) which causes the detuning to vary. The direct sound and the detuned one are summed analogically on the outputs.

c. FLANGER



In the early days the flanger was a mechanical device: two identical tapes were run in parallel while an Operator randomly controlled the speed of each unit, making minor variations up and down the nominal tape speed. Mixing the sound from both tapes, the signals sometimes aligned in phase, while other times aligned in counter phase, resulting in a time varying filtering that has been named "flange". The structure of the flanger is then that of the mix of two randomly delayed copies of a signal. Here the detuning process is same as the one of the chorus, added with a "regeneration" part.

d. ROTARY (SPEAKERS)



The rotary speaker effect simulates the sound effect achieved by rotating horn speakers and a bass cylinder, as first produced for organs. Leslie anybody? The sound is altered by the Doppler effect, the directional characteristic of the speakers, phase effects due to air turbulence, etc. The rotary speaker system is normally used with organs, but can be used also for guitar amplification.

※**NOTE:** When using the Rotary program, the Mix potentiometer has be turned all right on "WET" position.

Rotary Parameters Adjust Rate - This control sets the amplitude modulation rate.

5.3 DELAY

Delay effect is a single echo repetition where the repetitions occur after a certain "delay time" and where the number of repetitions depend on a "decay time", defining the time necessary to decrease the amplitude of the repetition from the original sound level to zero. This program provides a delay of up to 1000ms. The delay time can be adjusted in terms of delay and the decay time depends automatically from the delay time. This is a useful program which can add space and depth to vocals or instruments.

Delay Parameters - This control sets the time between the input signal and the first delay tap and the decay time.

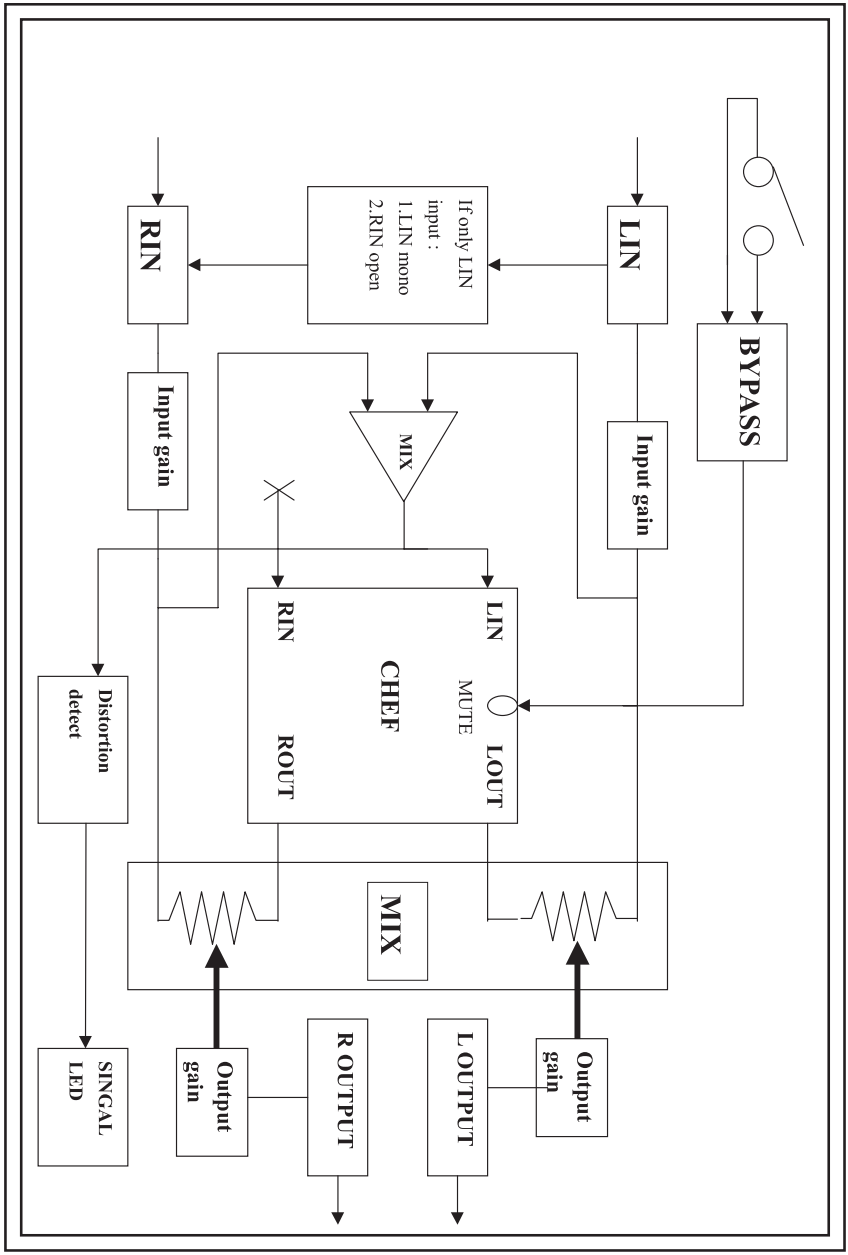
5.4 Combined Effects

a. Delay+Reverb
b. Flanger+Reverb
c. Chorus+Reverb

6. PRESET LIST

NO.	Preset	Description	Controllable Parameter	
			Parameter	Variable range
1	HALL1	Simulate a stage space of the sound.	Decay time Pre-delay	0.7~2.9s 54ms
2	HALL2	Simulate a large acoustic space of the sound.	Decay time Pre-delay	3.6~6.1s 77ms
3	HALL3	Simulate a medium bright hall with no pre-delay of the sound.	Decay time Pre-delay	0.7~2.9s 0ms
4	SPRING1	Suitable for organs and also be used in organs and guitar amplifiers.	Decay time Pre-delay	0.7~2.9s 3ms
5	SPRING2	Similar to the previous one, and also be used in organs and guitar amplifiers.	Decay time Pre-delay	3.6~6.1s 9ms
6	TAPE	Create more complex patterns that can add a rhythmic quality to the instrument.	Decay time Pre-delay	0.7~6.1s 19ms
7	PLATE1	Simulate the transducers sound like classic bright vocal plate.	Decay time Pre-delay	0.7~2.9s 19ms
8	PLATE2	Simulate a warmer variation of the previous program, sounding very well on acoustic guitar and strings.	Decay time Pre-delay	1.2~2.9s 19ms
9	TREMOLO	Provide an amplitude modulation of the input signal and is used as "WET" effect.	Rate	0.3~5.0Hz
10	CHORUS	Recreate the illusion of more than one instrument from a single instrument sound.	Rate	0.1~3.5Hz
11	FLANGER	Simulate to play with another person carrying out same the notes on the same instrument.	Rate	0.07~1.88Hz
12	DELAY	Reproduce the sound input on the output after a lapse of time.	Decay period	30~650ms
13	REV.+DELAY	Delay with room effect	Decay period Rev.decay time	30~650ms 0.7~6.1s
14	REV.+FLANGER	Stereo flanger and large room reverb	Flanger Rate Rev.decay time	0.07~1.88Hz 0.7~6.1s
15	REV.+CHORUS	Stereo chorus and large room reverb	Chorus rate Rev.decay time	0.3~3.5Hz 0.7~6.1s
16	Rotary	Simulate the sound effect achieved by the rotating horn speakers and a bass cylinder	Rate	1.0~5.0Hz

7. BLOCK DIAGRAM



8. TECHNICAL SPECIFICATION

Electrical	
Frequency Response:	+0.5 / -1.5 dB from 20 Hz to 20 kHz
S/N Ratio (process)	80 dB "A" wtg, 20 Hz-22 kHz
S/N Ratio (bypass)	>90 dB "A" wtg, 20 Hz-22 kHz
THD+Noise:	<0.008% @ 1 kHz (0 dBv, bypass)
Input	
Number of Channels:	2
Format:	1/4" unbalanced
Maximum Level (bypass):	+9 dBu
Impedance:	>500 kOhms
A/D - D/A Conversions	
A/D converter:	1 bit Sigma-Delta
D/A converter:	1 bit Sigma-Delta
Output	
Number of Channels:	2
Format:	1/4" unbalanced
Maximum Level (bypass):	+9 dBu
Output Impedance:	<500 Ohms
Front Panel	
Controls	IN/OUT levels (ANALOG)
	PROGRAM selections (2 knobs)
Indicators	Power, Signal clip LED
Rear Panel	
Input (LEFT/MONO, RIGHT)	1/4" 2-conductor (mono)
Output (LEFT, RIGHT)	1/4" 2-conductor (mono)
BYPASS	1/4" 2-conductor (auto-sense pedal type)
	for momentary footswitches
Power	9 Volt AC Power Adaptor
Processing and Memory	
Processor Speed:	12 MIPs (million instructions per second)
Internal DSP resolution:	52-bit MPY accumulator
Main Preset Programs	16
Preset Total Combinations	256
Internal digital audio memory:	3000 milliseconds
Physical	
Net Weight:	0.76 kg(1.26lb)
Dimension:	197(W)x131(D)x44(H)mm (7.76" x 5.12"x 1.73")

9. WARRANTY

1. WARRANTY REGISTRATION CARD

To obtain Warranty Service, the buyer should first fill out and return the enclosed Warranty Registration Card within 10 days of the Purchase Date.

All the information presented in this Warranty Registration Card gives the manufacturer a better understanding of the sales status, so as to provide a more effective and efficient after-sales warranty service. Please fill out all the information carefully and genuinely, miswriting or absence of this card will void your warranty service.

2. RETURN NOTICE

2.1 In case of return for any warranty service, please make sure that the product is well packed in its original shipping carton, and it can protect your unit from any other extra damage.

2.2 Please provide a copy of your sales receipt or other proof of purchase with the returned machine, and give detail information about your return address and contact telephone number.

2.3 A brief description of the defect will be appreciated.

2.4 Please prepay all the costs involved in the return shipping, handling and insurance.

3. TERMS AND CONDITIONS

3.1 ▲LTO warrants that this product will be free from any defects in materials and/or workmanship for a period of 1 year from the purchase date if you have completed the Warranty Registration Card in time.

3.2 The warranty service is only available to the original consumer, who purchased this product directly from the retail dealer, and it can not be transferred.

3.3 During the warranty service, ▲LTO may repair or replace this product at its own option at no charge to you for parts or for labor in accordance with the right side of this limited warranty.

3.4 This warranty does not apply to the damages to this product that occurred as the following conditions:

- Instead of operating in accordance with the user's manual thoroughly, any abuse or misuse of this product.
- Normal tear and wear.
- The product has been altered or modified in any way.
- Damage which may have been caused either directly or indirectly by another product / force / etc.
- Abnormal service or repairing by anyone other than the qualified personnel or technician.

And in such cases, all the expenses will be charged to the buyer.

3.5 In no event shall ▲LTO be liable for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

3.6 This warranty gives you the specific rights, and these rights are compatible with the state laws, you may also have other statutory rights that may vary from state to state.